to prepare ammonium nitrate on a large scale. The synthetic processes for the production of ammonia are described very briefly in a single column, but this is in accord with the classification of the former edition, where a full description of these processes is reserved for a later article under "nitrogen." The revision, as a whole, has been well done, and the new edition can be commended heartily as an accurate presentation of the state of applied chemistry after the vicissitudes of recent years.

(2) The publishers of le Blanc's "Text-book of Electro-chemistry" have adopted a simpler method of meeting the demand for a new edition. Although the title-page is dated 1920, the translator's preface bears no date. No references later than 1907 have been discovered by the reviewer, and the table of equivalents is certainly more than ten years old. In view of the rapid growth of the science of electro-chemistry, further comment is scarcely necessary.

(3) Prof. MacDougall's book contains an attractive and lucid account of the principal applications of thermodynamics to chemistry. The author writes as a chemist rather than as a mathematician, and, instead of giving merely an occasional numerical illustration of his equations and formulæ, has provided quantitative data even when these are scarcely needed to elucidate the text. Thus it is a pleasure to find a full list of specific heats of the solid elements, a table of the heat-capacities of gases and of the ratio of their specific heats at different temperatures, as well as useful tables of the heats of formation of metallic and non-metallic compounds and of heats of solution, combustion, and neutralisation. In the same way the later chapters contain useful tables of electrode-potentials, equivalent conductances, ionisation-coefficients, transference numbers, and ionic conductances. In dealing with the phase rule, one chapter only is devoted to theoretical considerations, whilst three chapters are required to cover the various examples which the author has selected to illustrate the applications of the rule. Another valuable feature of the book is the insertion at the end of each chapter of a large number of problems. These are of a very practical character, and illustrate clearly the many ways in which a knowledge of thermodynamics may be made use of in the study of chemical problems. Certainly no book with which the reviewer is acquainted presents the subject in a manner more likely to prove attractive to the chemist.

T. M. L.

Prices and Wages.

Prices and Wages: An Investigation of the Dynamic Forces in Social Economics. By P. Wallis and A. Wallis. Pp. xii + 456. (London: P. S. King and Son, Ltd., 1921.) 25*s.* net.

THE authors of this volume are, it may be gathered from the preface, business men without much literary experience. The consequent defects of the book, it is to be feared, render it unlikely that many readers will be found with sufficient patience to attempt the whole. Four hundred and fifty pages of reasoning and criticism are at the best a heavy task; when the reasoning is often obscure and unnecessarily verbose, when the criticism seems often ill-informed or based on misunderstanding, the task is apt to become almost unendurable.

The argument appears to be as follows: (1) The value of the net annual production, per head of persons engaged in the industry, for any one commodity, tends to fluctuate in the same way as for any other commodity; this agreement is much closer than for prices. (2) These fluctuations in the value of net annual production are due to fluctuations in the value of the money standard. (3) The value of the net annual production per head, at any one time, tends to be nearly the same for all commodities, including the money standard. (4) Wages and salaries tend approximately to the same proportion of the net annual production per head. (5) It follows from (3) and (4) that the annual wage-rate in any industry tends to be equivalent to the *net* annual production of gold per head for the same grade of labour in the gold-mining industry. (6) The approximately constant proportion of wages and salaries to total net annual product is due to the competition of unemployed labour; the maintenance of this pool of unemployment is the real failure of capitalism.

It should have been obvious even to unpractised writers that ordinary terms should not be employed in senses widely divergent from common usage. This rule has not been followed. The value of the net annual production per head of any commodity is spoken of throughout as its "normal price," with the result that the argument falls at times—for the reader if not for the authors also—into the most hopeless confusion. The reader comes across some phrase about "normal commodity prices"—dissents from it—passes on—and only perhaps some time later when wearied with an argument that seems to him nonsense may it occur to him that the authors did not mean normal prices at all, in the ordinary

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sense, but net annual products. Nor is the reader's understanding helped by careful consistence in the use of the term. On p. 116 we read: "This normal price consists in the number of articles produced per person (labour unit) multiplied by the money price," which suggests a gross and not a net product; but on p. 142, "when we take the normal prices which are based upon the unit of labour, we find that this price, *which is the price the producer gets. . . .*"—our italics. On p. 205 we find a clear statement that it is really the net product which is wanted, but on p. 303 we read "normal price is the market price or price per unit, multiplied by the quantity produced." The authors have only themselves to thank if few readers have the patience to stand much loose writing of this sort.

Frankly, this is a pity. For to the present reviewer there seems something to be said for the constructive argument of the book, though very little for much of the criticism contained in it. The argument might have received more attention if concisely presented, with unnecessary criticism eliminated. G. U. Y.

Our Bookshelf.

The War List of the University of Cambridge, 1914–18. Pp. xiv+616. (Cambridge: At the University Press, 1921.) 20*s.* net.

IN his address to the Senate of the University of Cambridge, delivered on October 1, 1915, the retiring vice-chancellor, Dr. M. R. James, spoke of the services which members of the university were giving in their country's need. He said: "We are debtors to all. . . . Yet the university bears them upon her heart and will not, I know, neglect to perpetuate the memory of them." No public memorial has, indeed, been raised to their memory, but a noble record has been given to the world by the publication of this volume, which will carry far and wide the names of those members of the university who served with his Majesty's forces.

The volume has been prepared under the able editorship of Major G. V. Carey, of Clare College, and it is based on the lists published from time to time by the *Cambridge Review*, the materials for which came from the various college records. The syndics of the University Press took over the records in December, 1919, and since that date every name has been checked by the official Service Lists. Faced with the task of deciding which names were to be included, it was determined that residence prior to war service should be the criterion, with the exception of those who were prevented from going into residence in October, 1914, by reason of their having joined the forces; further, only those names which appeared in the various Service Lists have been included. This necessarily excludes the names of many who performed valuable and distinguished national service in other capacities, but it is obvious that to obtain an accurate record doing justice to all is almost an impossibility.

The volume concludes with an alphabetical index to the names, and a comprehensive summary—in itself a task of considerable magnitude—giving, for each college and for the whole university, the number of men who served, the number killed in action, the number of honours, etc. The first total is 13,878, and the second 2162—figures which show what a great part the university played in the war, and she has commemorated them worthily in this handsome list.

Meteorological Office—Air Ministry: British Rainfall, 1920: The Sixtieth Annual Volume of the British Rainfall Organization. Pp. xxviii+285. (London: H.M.S.O., 1921.) 12*s.* 6*d.* net.

RAINFALL statistics over the British Isles have in no way suffered by the transfer of the collection and discussion of the observations from private to public control. The present annual volume is the sixtieth issued, and the second published under the management of the Meteorological Office. The war occasioned some diminution in the number of observers, but a considerable recovery from this is shown, the number now being 4952, an increase of 54 on 1919. A column is added to the detailed observations, giving the number of wet days or days with 0·04 in. or more of rain, and for the present the rain days or days with 0·01 in. of rain are also given.

Standard average values for the period 1881–1915 are used for the first time in "British Rainfall," and these are in agreement with the averages in use by the Meteorological Office in its various publications. Monthly average maps are given for the new period now introduced.

The distribution of total rainfall for 1920 is shown by a map as a frontispiece. Maps of monthly and seasonal rainfall are given, and the peculiarities are well described in the letterpress. Droughts and excessive rains are discussed, and there is much valuable information on evaporation and percolation in 1920.

Special articles are given on the new averages by the Superintendent of the Rainfall Organization, and also on the presence and distribution of salt in the air over the British Isles, by Mr. Wilfred Irwen, and on the Nipher rain-gauge shield, possibly of use where over-exposure is experienced.

Rainfall for 1920 was generally in excess of the average except in the eastern districts of Great Britain. The results for the droughty year 1921 will be of great interest. C. H.

Geography: Physical, Economic, Regional. By J. F. Chamberlain. (Lippincott's School Text Series.) Pp. xviii+509. (London: J. B. Lippincott Co., 1921.) 15*s.* net.

ESSENTIALLY this book is an account of the earth, its surroundings, and its products in relation to man, but, since it is addressed particularly to

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